Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
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Prevention of Significant Deterioration Air Permit

issued to the

Braintree Electric Light Department
150 Potter Road
Braintree, MA 02184

for the

Thomas A. Watson Generating Station
PSD Permit Number 049-119-MA10
Revision 1

Pursuant to the provisions of the Clean Air Act (CAA), Subchapter I, Part C (42 U.S.C. Section 7470, *et. seq*), the Code of Federal Regulations (CFR) Title 40, Section 52.21, and the April 11, 2011 Agreement for Delegation of the Federal Prevention of Significant Deterioration (PSD) Program by the United States Environmental Protection Agency, Region 1 (EPA) to the Massachusetts Department of Environmental Protection (MassDEP), the MassDEP is issuing Revision 1 to *Prevention of Significant Deterioration* (PSD) air quality permit No. 049-119-MA10 for the Braintree Electric Light Department (BELD), owner/operator of the Thomas A. Watson Generating Station (Watson Station). PSD Permit No. 049-119-MA10 was issued by EPA on April 4, 2008. BELD operates the Watson Station, a 116 megawatt (MW) quick-start, simple cycle, dual-fuel generating facility, at the Potter Road Facility in East Braintree, Massachusetts.

The design, construction and operation of the Watson Station shall be subject to the attached revised permit conditions and permit limitations. This revised permit shall be effective 30 days after the date of signature and shall remain in effect until rescinded by or surrendered to MassDEP. This revised permit does not relieve BELD from the obligation to comply with applicable state and federal air pollution control rules and regulations. All terms and conditions of the revised permit are enforceable by EPA, MassDEP and citizens under the CAA.

_____
Thomas Cushing, Chief
Air Quality Permit Section

March 15, 2013
Date of signature

Massachusetts Department of Environmental Protection

Prevention of Significant Deterioration Air Permit Revision

Braintree Electric Light Department
Thomas A. Watson Generating Station

Permit Terms and Conditions

Background for informational purposes:

Braintree Electric Light Department (BELD) currently operates the Potter Road municipal generating facility located in Braintree, Massachusetts. On April 4, 2008, the United States Environmental Protection Agency (EPA) issued Prevention of Significant Deterioration (PSD) Permit Number 049-119-MA10 to construct and operate a new 116 mega-watt (MW) quick-start, simple cycle, dual-fuel generating facility at the existing Potter Road Facility. The new power station, named the Thomas A. Watson Generating Station ("Watson Station" or "the Project"), was a major modification to the existing major source Potter Road Facility. Watson Station consists of two quick-start, simple cycle 58 MW Rolls-Royce Trent 60 WLE combustion turbines firing natural gas and/or ultra low sulfur diesel (ULSD) fuel oil. BELD has installed selective catalytic reduction (SCR) systems and oxidation catalysts (OC) on each turbine. The Facility also includes a 300 foot interconnecting 115 kV overhead transmission line, a short run high pressure gas line from a new meter station and an upgrade to the existing oil pipeline from the adjoining Citgo marine petroleum terminal.

During initial testing and operation in 2009, BELD determined that PSD modifications were necessary with regard to the startup and shutdown time limits and the sixty-minute nitrogen oxides (NO_x) mass emission limits in pounds per hour (lb/hr) during startup and shutdown periods. BELD states that the startup and shutdown emission limits contained in the original PSD permit were proposed based on manufacturer's emission estimates. BELD's application states that since the turbines commenced operation in April of 2009, it had become evident the actual operating conditions and emissions are different from the manufacturer's estimates. Although each turbine achieves 50% load in ten (10) minutes or less, the turbines have been unable to consistently achieve steady state emission limits within only 10 minutes.

On April 11, 2011 an Agreement for Delegation of the Federal Prevention of Significant Deterioration (PSD) Program between the EPA and the Massachusetts Department of Environmental Protection (MassDEP) was signed effective. BELD submitted PSD Permit Modification Application No. SE-11-023, under Transmittal No. X238188, on August 19, 2011 with supplemental information, including a 1-Hour NO_2 Air Quality Modeling Analysis received on March 29, 2012 and an application revision received on October 15, 2012.

I. Emission Limitations

1. Except during startup and shutdown (SUSD) operations as defined in Part I.3 below, the owner/operator shall not discharge or cause to discharge into the atmosphere in excess of either of the following emission limits for each turbine firing natural gas:

a. Particulate Matter less than or equal to 10 micrometers (PM_{10}) (1- hour block average):
0.02 pounds per million British thermal units (0.02 lbs/MMBtu) and 5.0 lbs per hour (lbs/hr)

b. Nitrogen oxide (NOx) (1- hour block average):
2.5 part per million by volume on the dry basis corrected to 15% oxygen (ppmvd @ 15% O_2) and 5.0 lbs/hr

2. Except during startup and shutdown (SUSD) operations as defined in Part I.3 below, the owner/operator shall not discharge or cause to discharge into the atmosphere in excess of either of the following emission limits for each turbine while firing ULSD:

a. PM_{10} (1- hour block average):
0.05 lbs/MMBtu and 15 lbs/hr

b. NOx (1- hour block average):
5 ppmvd @15% O_2 and10.3 lbs/hr

3. For startup and shutdown (SUSD) operations, the owner/operator shall not exceed the emission limits listed in Table 1. The startup period is defined as the first twenty (20) minute period from the beginning of turbine fuel burning operation. The shutdown period is defined as the final ten (10) minute period preceding the end of turbine fuel burning operations.

Table 1: SUSD Emission Rates

Natural Gas				
Pollutant	Startup lb/MMBtu	Shutdown lb/MMBtu	Startup lbs/hr	Shutdown lbs/hr
NOx	0.092	0.047	15.00	10.00
PM_{10}	0.020	0.020	5.00	5.00

ULSD				
Pollutant	Startup lb/MMBtu	Shutdown lb/MMBtu	Startup lbs/hr	Shutdown lbs/hr
NOx	0.124	0.060	25.00	20.00
PM_{10}	0.061	0.079	15.00	15.64

a. The startup lb/MMBtu limit is the average emissions limit over a 20 minute startup period.

b. The shutdown lb/MMBtu is the average emissions limit over a 10 minute shutdown period.

c. The lbs/hr startup emission rate reflects startup emissions during the first sixty (60) minutes of turbine operation.

d. The lbs/hr shutdown emission rate reflects shutdown emissions during the last sixty (60) minutes of turbine operation.

4. The total NOx emissions from the two turbines shall not exceed 58.8 tons on a consecutive 12-month period.

II. Operational Conditions

1. The owner/operator shall operate the SCR at all times while the turbines are in operation and the turbine exhaust temperature exceeds 650°F.

2. Each turbine will operate at or above 50% power, with the exception of startup or shutdown periods.

3. The owner/operator shall only combust natural gas or ULSD fuel.

4. Neither turbine shall combust ULSD in excess of 2,880 hours in any consecutive 12-month period.

5. The sulfur content of natural gas shall not exceed 1.6 grains per hundred cubic foot.

6. The sulfur content of the ULSD shall not exceed 15 ppm (0.0015 percent by weight).

7. The total heat input into each turbine shall not exceed 546 MMBtu/hr while firing natural gas.

8. The total heat input into each turbine shall not exceed 535 MMBtu/hr while firing USLD.

III. Monitoring Requirements

1. The owner/operator shall install, operate and maintain two Continuous Emission Monitoring Systems (CEMS) to monitor the Oxygen (O_2) and Nitrogen Oxides (NOx) from each turbine. The CEMS shall satisfy the requirements of Performance Specification 2 (PS-2) and Performance Specification 3 (PS-3) of 40 CFR Part 60, Appendix B and Appendix F.

2. No less than 60 days before initial startup, the owner/operator shall submit to EPA-New England for review and approval a quality assurance/quality control (QA/QC) program for the long-term operation of the CEMS. The QA/QC plan shall conform to the requirements of 40 CFR Part 60, Appendix F, and all applicable portions of 40 CFR Parts 72 and 75. EPA-New England will provide a written response either approving the proposed QA/QC program as submitted, or approving it subject to changes as stated. The owner/operator must conduct the QA/QC program in accordance with the conditions of EPA-New England's written response. The owner/operator shall not modify or depart from the QA/QC program except with the advance written approval of EPA.

3. The owner/operator shall determine total annual NOx emissions for Condition I.4. (58.8 tons on a consecutive 12-month period) by using the totalizing function of the NOx CEMS.

4. The owner/operator shall install, operate and maintain a single certified natural gas flow meter. The owner/operator shall apportion the hourly natural gas flow and heat input among the two turbines using the methods specified in 40 CFR 75 (Section 2.1.2 and 3.4.3 of Appendix D and Equation F-21d.)

5. The owner/operator shall install, operate and maintain a single certified ULSD flow meter. The owner/operator shall apportion the hourly ULSD flow and heat input among the two turbines using the methods specified in 40 CFR 75 (Section 2.1.2 and 3.4.3 of Appendix D and Equation F-21d.)

6. The owner/operator shall install and maintain non-resettable elapsed operating hour meters or the equivalent software to accurately indicate the elapsed operating time of each turbine.

7. The owner/operator shall obtain test results documenting that the sulfur content of the ULSD meets the 15 ppm sulfur in fuel limit for each fuel delivery.

8. The sulfur content shall be determined by ASTM D1072, Standard Test Method for Total Sulfur in Fuel Gases.

9. The owner/operator shall install and operate two thermocouples to measure the temperature of the exhaust temperature of each turbine.

IV. Testing Requirements

1. The owner/operator shall ensure that all stack and exhaust ducts are constructed to accommodate the emission testing requirements stipulated in 40 CFR Part 60, Appendix A.

2. If and when required by MassDEP or EPA, the owner/operator shall conduct emission testing in accordance with U.S. EPA Reference Test Methods and the regulations at 40 CFR Part 60.8(a).

3. Performance tests using EPA methods shall be conducted and the results reported in accordance with the test methods set forth in 40 CFR 60.8 and 40 CFR 60, Appendix A.

4. The owner/operator shall provide MassDEP and EPA with a test protocol at least 45 days prior to such tests. The test protocol shall include a detailed description of sampling port locations, sampling equipment, sampling and analytical procedures, and operating conditions for any such emissions testing on each turbine. The owner/operator shall revise the plan upon MassDEP and EPA request.

5. The owner/operator shall submit the final emissions test report(s) to the MassDEP and EPA-New England within 60 days after the completion of each of the tests.

V. Record Keeping Requirements

1. The owner/operator shall maintain the records of all information used to show compliance with the terms and conditions of this permit. The owner/operator shall maintain the records for five years in a location accessible to staff personnel from EPA and the Massachusetts Department of Environmental Protection.

2. The record keeping shall, at a minimum, include:

a. All compliance records for the turbines. Such records shall include, but are not limited to, fuel and ammonia usage; emissions test results; monitoring equipment data and reports; hours of operation of each turbine including start-ups and shut-downs; records of all fuel receipts; daily records of turbine exhaust temperature; and the records showing the hourly and monthly ULSD and natural gas consumption of each turbine.

b. All records of malfunctions on the turbine and CEMS equipment including, at a minimum: the date and time the malfunction occurred; a description of the malfunction and the corrective action taken; the date and time corrective actions

were initiated; and the date and time corrective actions were completed and the modified equipment was returned to compliance. For purposes of this permit, a malfunction is a sudden and reasonably unforeseeable failure that results in an exceedance of the emission limits in this permit.

3. The owner/operator shall comply with any request by EPA or MassDEP to supply any of the above records.

VI. Reporting Requirements

1. All notifications and reporting required by this permit shall be submitted to the address listed in Section XII below.

2. The owner/operator shall submit to MassDEP and EPA semi-annual reports postmarked by January 30th and July 30th of each year, which contain the following information from the prior calendar 6-month period: rolling 12-month NOx emissions as calculated by the owner/operators' emissions monitoring system emissions, monthly fuel usage, and turbine NOx emission calculations. The information required in these reports may be incorporated into the required excess emission reports, as appropriate, submitted in accordance with 40 CFR Part 60.7(c) and (d).

VII. General Requirements

1. A copy of this permit shall be affixed at or adjacent to the subject equipment.

2. After the occurrence of any upsets or malfunctions to the turbines that result in a violation of any emission limitation contained herein, the owner/operator must notify the Southeast Regional Office of MassDEP, BWP Air Permit Section Chief by telephone (508) 946-2824, email: sero.air@state.ma.us, or fax (508) 947-6557, as soon as possible, but no later than one (1) business day after discovery and subsequently in writing to the address listed in Section XII within three (3) days thereafter.

VIII. Right of Entry

The owner/operator shall allow all authorized representatives of EPA or MassDEP, upon presentation of credentials, to enter upon or through the facility where records required under this permit are kept. The owner/operator shall allow such authorized representatives, at reasonable times:

a. To access and copy any records that must be kept under this permit;

b. To inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and

c. To monitor substances or parameters for the purpose of assuring compliance with this permit.

IX. Transfer of Ownership

In the event of any changes in control or ownership of the BELD facility, this permit shall be binding on all subsequent owners and operators. The owner/operator shall notify the succeeding owner and operator of the existence of this permit and its conditions. Notification shall be by letter with a copy forwarded to the EPA and MassDEP.

X. Severability

The provisions of this permit are severable, and if any provision of the permit is held invalid, the remainder of this permit will not be affected thereby.

XI. Other Applicable Regulations

The owner/operator shall construct and operate the turbines in compliance with all other applicable provisions of federal and state regulations.

XII. Agency Addresses

All correspondence required by this permit shall be forwarded to:

Air Compliance Clerk
U.S. EPA New England
5 Post Office Square
Suite 100, Mail Code OES04-2
Boston, MA 02109-3912

BWP Air Permit Section Chief
MassDEP, SERO
20 Riverside Drive
Lakeville, MA 02347